

The LBNE Collaboration

C. Adams,⁶⁶ T. Akiri,¹⁷ M. Andrews,¹⁸ I. Anghel,²⁸ E. Arrieta-Diaz,³⁶ M. Artuso,⁵⁶ J. Asaadi,⁵⁶ X. Bai,⁵³ M. Baird,²⁶ B. Balantekin,⁶⁵ B. Baller,¹⁸ B. Baptista,²⁶ D. Barker,⁵⁸ W. Barletta,³⁹ G. Barr,⁴³ A. Bashyal,⁶⁰ M. Bass,¹² V. Bellini,¹⁰ B.E. Berger,¹² M. Bergevin,⁵ E. Berman,¹⁸ H. Berns,⁵ A. Bernstein,³¹ R. Bernstein,¹⁸ V. Bhatnagar,²⁵ B. Bhuyan,²⁴ M. Bishai,⁴ A. Blake,⁹ E. Blaufuss,³⁵ B. Bleakley,⁵⁴ E. Blucher,¹¹ S. Blusk,⁵⁶ V. Bocean,¹⁸ T. Bolton,²⁹ R. Breedon,⁵ A. Brandt,⁶⁰ C. Bromberg,³⁶ R. Brown,⁴ N. Buchanan,¹² B. Bugg,⁵⁷ L. Camilleri,¹⁴ R. Carr,¹⁴ G. Carminati,⁶ F. Cavanna,⁶⁶ A. Chen,¹⁸ H. Chen,⁴ K. Chen,⁴ D. Cherdack,¹² C. Chi,¹⁴ S. Childress,¹⁸ B. Choudhary,²³ C. Christofferson,⁵³ E. Church,⁶⁶ D. Cline,⁷ T. Coan,⁵⁵ J. Coelho,⁶¹ S. Coleman,¹³ J. Conrad,³⁹ M. Convery,⁵¹ R. Corey,⁵³ L. Corwin,⁵³ G.S. Davies,²⁸ S. Dazeley,³¹ A. de Gouvea,⁴¹ J.K. de Jong,⁴³ C. Escobar,¹⁸ K. De,⁶⁰ D. Demuth,³⁷ M. Diwan,⁴ Z. Djurcic,² J. Dolph,⁴ G. Drake,² H. Duyang,⁵² S. Dye,¹⁹ D. Edmunds,³⁶ S. Elliott,³³ S. Eno,³⁵ S. Enomoto,⁶³ A. Farbin,⁶⁰ L. Falk,⁶⁷ J. Felde,⁵ F. Feyzi,⁶⁵ L. Fields,⁴¹ B. Fleming,⁶⁶ J. Fowler,¹⁷ W. Fox,²⁶ A. Friedland,³³ B. Fujikawa,³⁰ H. Gallagher,⁶¹ R. Gandhi,²¹ G. Garvey,³³ V.M. Gehman,³⁰ G. Geronimo,⁴ R. Gill,⁴ M.C. Goodman,² J. Goon,⁵⁸ M. Graham,⁵¹ R. Gran,³⁸ C. Grant,⁵ H. Greenlee,¹⁸ L. Greenler,⁶⁵ V. Guarino,² E. Guardincerri,³³ R. Guenette,⁶⁶ S. Habib,¹ A. Habig,³⁸ R.W. Hackenburg,⁴ A. Hahn,¹⁸ T. Haines,³³ T. Handler,⁵⁷ S. Hans,⁴ J. Hartnell,⁶⁷ J. Harton,¹² R. Hatcher,¹⁸ A. Hatzikoutelis,⁵⁷ S. Hays,¹⁸ E. Hazen,³ M. Headley,⁴⁹ A. Heavey,¹⁸ K. Heeger,⁶⁵ J. Heise,⁴⁹ R. Hellauer,³⁵ A. Himmel,¹⁷ M. Hogan,¹² A. Holin,³² G. Horton-Smith,²⁹ J. Howell,¹⁸ P. Hurh,¹⁸ J. Huston,³⁶ J. Hylen,¹⁸ R. Imlay,³⁴ J. Insler,³⁴ Z. Isvan,⁴ C. Jackson,⁶⁰ D. Jaffe,⁴ C. James,¹⁸ M. Johnson,¹⁸ R. Johnson,¹³ S. Johnson,¹³ W. Johnston,¹² J. Johnstone,¹⁸ B. Jones,³⁹ H. Jostlein,¹⁸ T. Junk,¹⁸ R. Kadel,³⁰ G. Karagiorgi,¹⁴ J. Kaspar,⁶³ T. Katori,³⁹ B. Kayser,¹⁸ E. Kearns,³ P. Keener,⁴⁴ S.H. Kettell,⁴ M. Kirby,¹⁸ J. Klein,⁴⁴ G. Koizumi,¹⁸ S. Kopp,⁵⁹ W. Kropp,⁶ V.A. Kudryavtsev,⁵⁰ A. Kumar,²⁵ J. Kumar,¹⁹ T. Kutter,³⁴ K. Lande,⁴⁴ C. Lane,¹⁶ K. Lang,⁵⁹ F. Lanni,⁴ R. Lanza,³⁹ T. Latorre,⁴⁴ F. La Zia,¹⁰ J. Learned,¹⁹ D. Lee,³³ K. Lee,⁷ S. Li,⁴ Y. Li,⁴ Z. Li,¹⁷ J. Libo,⁵² S. Linden,³ J. Ling,⁴ J. Link,⁶² L. Littenberg,⁴ H. Liu,²⁰ Q. Liu,³³ T. Liu,⁵⁵ J. Losecco,⁴² W. Louis,³³ B. Lundberg,¹⁸ T. Lundin,¹⁸ C. Maesano,⁵ S. Magill,² G. Mahler,⁴ S. Malys,⁴⁰ F. Mammoliti,¹⁰ S. Mandal,²³ A. Mann,⁴⁴ A. Mann,⁶¹ P. Mantsch,¹⁸ A. Marchionni,¹⁸ W. Marciano,⁴ C. Mariani,⁶² J. Maricic,¹⁹ A. Marino,¹³ M. Marshak,³⁷ J. Marshall,⁹ S. Matsuno,¹⁹ C. Mauger,³³ N. Mayer,⁶¹ E. McCluskey,¹⁸ K. McDonald,⁴⁶ K. McFarland,⁴⁸ D. McKee,²⁹ R. McKeown,⁶⁴ R. McTaggart,⁵⁴ R. Mehdiyev,⁵⁹ D. Mei,⁵⁸ Y. Meng,⁷ B. Mercurio,⁵² M.D. Messier,²⁶ W. Metcalf,³⁴ R. Meyhandan,¹⁹ R. Milincic,¹⁹ W. Miller,³⁷ G. Mills,³³ S. Mishra,⁵² S. Moed Sher,¹⁸ N. Mokhov,¹⁸ D. Montanari,¹⁸ C.D. Moore,¹⁸ J. Morfin,¹⁸ W. Morse,⁴ S. Mufson,²⁶ D. Muller,⁵¹ J. Musser,²⁶ D. Naples,⁴⁵ J. Napolitano,⁴⁷ M. Newcomer,⁴⁴ E. Niner,²⁶ B. Norris,¹⁸ T. Olson,⁶¹ B. Page,³⁶ S. Pakvasa,¹⁹ J. Paley,² O. Palamara,⁶⁶ V. Paolone,⁴⁵ V. Papadimitriou,¹⁸ S. Park,⁶⁰ Z. Parsa,⁴ B. Paulos,⁶⁵ K. Partyka,⁶⁶ Z. Pavlovic,³³ A. Perch,³² J.D. Perkin,⁵⁰ S. Peeters,⁶⁷ R. Petti,⁵² R. Plunkett,¹⁸ C. Polly,¹⁸ S. Pordes,¹⁸ R. Potenza,¹⁰ A. Prakash,³⁹ O. Prokofiev,¹⁸ G. Perdue,⁴⁸ X. Qian,⁸ J.L. Raaf,¹⁸ V. Radeka,⁴ R. Rajendran,¹⁸ I. Rakhno,¹⁸ R. Rameika,¹⁸ J. Ramsey,³³ B. Rebel,¹⁸ S. Rescia,⁴ D. Reitzner,¹⁸ M. Richardson,⁵⁰ K. Riesselman,¹⁸ M. Robinson,⁵⁰ M. Ronquest,³³ M. Rosen,¹⁹ C. Rosenfeld,⁵² R. Rucinski,¹⁸ S. Sahijpal,²⁵ H. Sahoo,² N. Samios,⁴ M.C. Sanchez,²⁸ H. Schellman,⁴¹ R. Schmitt,¹⁸ D. Schmitz,¹¹ J. Schneps,⁶¹ K. Scholberg,¹⁷ S. Seibert,⁴⁴ M. Shaevitz,¹⁴ P. Shanahan,¹⁸ R. Sharma,⁴ T. Shaw,¹⁸ N. Simos,⁴ V. Singh,²² G. Sinnis,³³ W. Sippach,¹⁴ T. Skwarnicki,⁵⁶ M. Smy,⁶ H. Sobel,⁶ M. Soderberg,⁵⁶ J. Sondericker,⁴ W. Sondheim,³³ N.J.C. Spooner,⁵⁰ M. Stancari,¹⁸ I. Stancu,¹ A. Stefanik,¹⁸ J. Stewart,⁴ S. Stone,⁵⁶ J. Strait,¹⁸ M. Strait,¹¹ S. Striganov,¹⁸ G. Sullivan,³⁵ L. Suter,² R. Svoboda,⁵ B. Szczerbinska,¹⁵ M. Szydagis,⁵ A. Szels,⁶⁶ R. Talaga,² M. Tamsett,⁶⁷ S. Tariq,¹⁸ R. Tayloe,²⁶ C. Taylor,³³ D. Taylor,³⁰ D. Taylor,⁴⁹ A. Teymourian,⁷ H. Themann,⁴ M. Thiesse,¹⁶ J. Thomas,³² L.F. Thompson,⁵⁰ M. Thomson,⁹ C. Thorn,⁴ X. Tian,⁵² D. Tiedt,⁵³ W. Toki,¹² N. Tolich,⁶³ M. Tripathi,⁵ I. Tropin,¹⁸ M. Tzanov,³⁴ J. Urheim,²⁶ S. Usman,⁴⁰ M. Vagins,²⁷ R. Van Berg,⁴⁴ R. Van de Water,³³ G. Varner,¹⁹ K. Vaziri,¹⁸ G. Velev,¹⁸ B. Viren,⁴ T. Wachala,¹² D. Wahl,⁶⁵ A. Waldron,⁶⁷ C.W. Walter,¹⁷ H. Wang,⁷ W. Wang,⁶⁴ D. Warner,¹² R. Wasserman,¹² B. Watson,⁶⁰ A. Weber,⁴³ W. Wei,⁵⁸ R. Wendell,²⁷ M. Wetstein,¹¹ A. White,⁶⁰ H. White,³³ L. Whitehead,²⁰ D. Whittington,²⁶ J. Willhite,⁴⁹ W. Willis,¹⁴ R.J. Wilson,¹² L. Winslow,⁷ E. Worcester,⁴ T. Wyman,¹⁸ T. Xin,²⁸ K. Yarritu,³³ J. Ye,⁵⁵ J. Yu,⁶⁰ M. Yeh,⁴ B. Yu,⁴ G. Zeller,¹⁸ C. Zhang,⁴ C. Zhang,⁵⁸ E.D. Zimmerman,¹³ and R. Zwaska¹⁸

¹Univ. of Alabama, Tuscaloosa, AL 35487-0324, USA

²Argonne National Laboratory, Argonne, IL 60437, USA

³Boston Univ., Boston, MA 02215, USA

- ⁴Brookhaven National Laboratory, Upton, NY 11973-5000, USA
⁵Univ. of California at Davis, Davis, CA 95616, USA
⁶Univ. of California at Irvine, Irvine, CA 92697- 4575, USA
⁷Univ. of California at Los Angeles, Los Angeles, CA 90095-1547, USA
⁸California Inst. of Tech., Pasadena, CA 91109, USA
⁹Univ. of Cambridge, Cambridge CB3 0HE, United Kingdom
¹⁰Univ. of Catania and INFN, I-95129 Catania, Italy
¹¹Univ. of Chicago, Chicago, IL 60637-1434, USA
¹²Colorado State Univ., Fort Collins, CO 80521, USA
¹³Univ. of Colorado, Boulder, CO 80309 USA
¹⁴Columbia Univ., New York, NY 10027 USA
¹⁵Dakota State University, Brookings, SD 57007, USA
¹⁶Drexel Univ., Philadelphia, PA 19104, USA
¹⁷Duke Univ., Durham, NC 27708, USA
¹⁸Fermilab, Batavia, IL 60510-500, USA
¹⁹Univ. of Hawaii, Honolulu, HI 96822-2216, USA
²⁰Univ. of Houston, Houston, Texas, 77204, USA
²¹Harish-Chandra Research Institute, Allahabad-211 019, India
²²Banaras Hindu Univ., Varanasi UP 221005, India
²³Univ. of Delhi, Delhi 110007, India
²⁴Indian Institute of Technology Guwahati, Guwahati, 781 039, India.
²⁵Panjab Univ., Chandigarh 160014, U.T., India
²⁶Indiana Univ., Bloomington, Indiana 47405, USA
²⁷Kavli Institute for the Physics and Mathematics of the Universe, University of Tokyo, Chiba 277-8568, Japan
²⁸Iowa State Univ., Ames, IA 50011, USA
²⁹Kansas State Univ., Manhattan, KS 66506, USA
³⁰Lawrence Berkeley National Lab., Berkeley, CA 94720- 8153, USA
³¹Lawrence Livermore National Lab., Livermore, CA 94551, USA
³²University College London, London, WIC1E 6BT, England, UK
³³Los Alamos National Lab., Los Alamos, NM 87545, USA
³⁴Louisiana State Univ., Baton Rouge, LA 70803-4001, USA
³⁵Univ. of Maryland, College Park, MD 20742-4111, USA
³⁶Michigan State Univ., East Lansing, MI 48824, USA
³⁷Univ. of Minnesota, Minneapolis, MN 55455, USA
³⁸Univ. of Minnesota, Duluth, Duluth, MN 55812, USA
³⁹MIT Massachusetts Inst. of Technology, Cambridge, MA 02139- 4307, USA
⁴⁰National Geospatial-Intelligence Agency, Reston, VA 20191, USA
⁴¹Northwestern University, Evanston, IL 60208, USA
⁴²Univ. of Notre Dame, Notre Dame, IN 46556-5670, USA
⁴³Univ. of Oxford, Oxford OX1 3RH England, UK
⁴⁴Univ. of Pennsylvania, Philadelphia, PA 19104- 6396, USA
⁴⁵University of Pittsburgh, Pittsburgh, PA 15260, USA
⁴⁶Princeton University, Princeton, NJ 08544-0708, USA
⁴⁷Rensselaer Polytechnic Inst., Troy, NY 12180- 3590, USA
⁴⁸Univ. of Rochester, Rochester, NY 14627-0171, USA
⁴⁹Sanford Underground Research Facility, Lead, SD 57754, USA
⁵⁰Univ. of Sheffield, Sheffield, S3 7RH, England, UK
⁵¹SLAC National Accelerator Laboratory, Menlo Park, CA 94025, USA
⁵²Univ. of South Carolina, Columbia, SC 29208, USA
⁵³South Dakota School of Mines and Technology, Lead, SD 57754, USA
⁵⁴South Dakota State Univ., Brookings, SD 57007, USA
⁵⁵Southern Methodist Univ., Dallas, TX 75275, USA
⁵⁶Syracuse Univ., Syracuse, NY 13244-1130, USA
⁵⁷Univ. of Tennessee, Knoxville TN 37996, USA
⁵⁸Univ. of South Dakota, Vermillion, SD 57069, USA
⁵⁹Univ. of Texas, Austin, Texas 78712, USA
⁶⁰Univ. of Texas at Arlington, Arlington, Texas 76019, USA
⁶¹Tufts Univ., Medford, Massachusetts 02155, USA
⁶²Virginia Tech., Blacksburg, VA 24061-0435, USA
⁶³Univ. of Washington, Seattle, WA 98195-1560, USA
⁶⁴College of William and Mary, Williamsburg, VA 23187-8795, USA
⁶⁵Univ. of Wisconsin, Madison, WI 53706, USA
⁶⁶Yale Univ., New Haven, CT 06520, USA
⁶⁷Univ. of Sussex, Brighton, BN1 9RH, UK